



## Appendix B

Excerpts from "Reply Comments FCC 98-208 Notice of Inquiry in the matter of Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems", Thomas E. McEwan, TEM Innovations, dated 2 January 1999.

*Note: bold emphasis added*

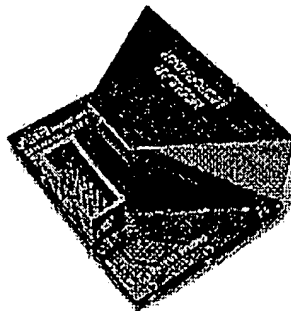
---

"This NOI has generated concern that UWB devices will proliferate. They will not—their tremendous susceptibility to interference will limit UWB deployment to portable, short-range systems such as subsurface imagers (e.g., GPR) and to remotely located systems. It is too late for the widespread deployment of UWB sensors and voice/data links—cell and PCS phones, microwave ovens, WLAN's, VHF/UHF TV, and FAA radar got there first.

"In contrast, carrier-based **wideband sensors with front-end RF filters** will operate where:

- (1) the mutual interference potential is low, e.g., the 15.209 bands
- (2) there are no interference sources, e.g., inside storage tanks
- (3) environmental absorption is high, e.g., at 24GHz and higher
- (4) large amounts of sample averaging ( $N=10,000$ ) can be applied, e.g., most sensors
- (5) directional antennas and short ranges limit interference, e.g., door openers.

"Wideband technology can employ very simple front end filtering to eliminate interference from the common sources cited in the previous example. **TEM Innovations takes advantage of the sharp filtering offered by a waveguide beyond cutoff to eliminate cell and PCS phone interference to its 5.8GHz sensors.** Yet, the cost of this "filter" is only a few cents worth of sheet metal, which also serves to provide antenna gain and directionality. An example is given in Figure 1 for a TEM Innovations 5.8GHz Differential Pulse Doppler motion sensor."



"Figure 1. A 5.8GHz horn/waveguide antenna forms a natural sharp-cutting highpass filter to eliminate interference from common sources below 30Hz."

Note that this approach relies upon the antenna to serve as the filter, with filtering only performed on receive (front-end RF filtering for interference rejection).